FORM PTO-1390 REV. 5-93	US DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEYS DOCKET NUMBER P00,0134
TRANSMITTAL LETTER TO THE UNITED STATES **DESIGNATED/ELECTED OFFICE (DO/EO/US)** **CONCERNING A FILING UNDER 35 U.S.C. 371**		U.S.APPLICATION NO. (if known, see 37 CFR 1.5) **09/509049**

INTERNATIONAL APPLICATION NO. **PCT/DE98/02634**	INTERNATIONAL FILING DATE **07 SEPTEMBER 1998**	PRIORITY DATE CLAIMED **22 SEPTEMBER 1997**

TITLE OF INVENTION

"COMMUNICATION SYSTEM"

APPLICANT(S) FOR DO/EO/US

JUERGEN BRIESKORN

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay.
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of International Application as filed (35 U.S.C. 371(c)(2)) - drawings attached.
    a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).
    b. ☐ has been transmitted by the International Bureau.
    c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
6. ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2) - drawings attached.
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. §371(c)(3))
    a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
    b. ☐ have been transmitted by the International Bureau.
    c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
    d. ☒ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☒ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:
11. ☒ An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98; **(PTO 1449, Prior Art, Search Report).**
12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 C.F.R. 3.28 and 3.31 is included.
    (SEE ATTACHED ENVELOPE)
13. ☒ Amendment "A" Prior to Action.
    ☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information:
    a. ☒ Submission of Informal Drawings, 7 sheets of drawings, Figures 1-7B; and
            Request for Approval of Drawing Modifications, 2 sheets of drawings, Figures 2 & 3.

    b. ☒ EXPRESS MAIL #EL 470809135US dated March 21,2000.

U.S. APPLICATION NO. (if known, see 37 C.F.R. 1.5) 09/509049	INTERNATIONAL APPLICATION NO. PCT/DE98/02634	ATTORNEY'S DOCKET NUMBER P00,0134

17. ☒ The following fees are submitted:

		CALCULATIONS	PTO USE ONLY

BASIC NATIONAL FEE (37 C.F.R. 1.492(a)(1)-(5):

Search Report has been prepared by the EPO or JPO $840.00

International preliminary examination fee paid to USPTO (37 C.F.R. 1.482) . . $670.00

No international preliminary examination fee paid to USPTO (37 C.F.R. 1.482) but international search fee paid to USPTO (37 C.F.R. 1.445(a)(2) $760.00

Neither international preliminary examination fee (37 C.F.R. 1.482) nor international search fee (37 C.F.R. 1.445(a)(2) paid to USPTO $970.00

International preliminary examination fee paid to USPTO (37 C.F.R. 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) . . . . $ 96.00

ENTER APPROPRIATE BASIC FEE AMOUNT = $ 840.00

Surcharge of $130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 C.F.R. 1.492(e)). $

Claims	Number Filed		Number Extra	Rate	
Total Claims	16	- 20 =	0	X $ 18.00	$
Independent Claims	02	- 3 =	0	X $ 78.00	$
Multiple Dependent Claims				$260.00 +	$

TOTAL OF ABOVE CALCULATIONS = $ 840.00

Reduction by ½ for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 C.F.R. 1.9, 1.27, 1.28) $

SUBTOTAL = $ 840.00

Processing fee of $130.00 for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(f)). + $

TOTAL NATIONAL FEE = $ 840.00

Fee for recording the enclosed assignment (37 C.F.R. 1.21(h). The assignment must be accompanied by an appropriate cover sheet (37 C.F.R. 3.28, 3.31). $40.00 per property +

TOTAL FEES ENCLOSED = $ 840.00

	Amount to be refunded	$
	charged	$

a. ☒ A check in the amount of $ 840.00 to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of $ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 08-2290. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 C.F.R. 1.494 or 1.495 has not been met, a petition to revive (37 C.F.R. 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

Hill & Simpson
A Professional Corporation
85th Floor Sears Tower
Chicago, Illinois 60606

SIGNATURE

Steven H. Noll
NAME

28,982
Registration Number

-1-

BOX PCT
IN THE UNITED STATES DESIGNATED/ELECTED OFFICE
OF THE UNITED STATES PATENT AND TRADEMARK OFFICE
UNDER THE PATENT COOPERATION TREATY--CHAPTER II

5   APPLICANT(S):   JUERGEN BRIESKORN

ATTORNEY DOCKET NO.:   P00,0134

INTERNATIONAL APPLICATION NO: PCT/DE98/02634

INTERNATIONAL FILING DATE: 07 SEPTEMBER 1998

INVENTION: "COMMUNICATION SYSTEM"

10   Assistant Commissioner for Patents,
Washington D.C. 20231

AMENDMENT "A" PRIOR TO ACTION

Sir:

Applicants herewith amend the above-referenced PCT application, and
15   request entry of the Amendment prior to examination on the United States
Examination Phase.

IN THE SPECIFICATION:

On page 2:

cancel lines 2-4 and substitute the following

20   --SPECIFICATION

TITLE

"COMMUNICATION SYSTEM"

BACKGROUND OF THE INVENTION

Field of the Invention– therefor;

25   above line 8, insert

Description of the Related Art--; and

cancel line 9 and substitute --predominantly on the ISDN (Integrated
Services Digital Network) standard.-- therefor; and

in line 12, cancel "and films [...]" and substitute --, films and-- therefor.

On page 3:

in line 3, after "interface", insert --,however,--, and cancel "it" and substitute --the U_{p0} interface,-- therefor;

in line 9, after "Internet", insert --,--;

in line 10, cancel "up to" and substitute --and-- therefor;

in line 11, cancel "belongs to" and substitute --is well known in-- therefor;

in line 21, cancel "for example";

in line 23, cancel "for this purpose" and substitute --to use such peripheral devices-- therefor;

in line 30, cancel "for example"; and

in line 31, cancel "for example".

On page 4:

in line 6, cancel "The USB" and substitute --It-- therefor;

in line 7, cancel "for example";

in line 10, cancel "thereby";

in line 18, cancel "for example";

in lines 20-21, cancel "for example";

in line 28, cancel "for example" and substitute --, for example,-- therefor; and

in line 31, cancel "for example", and cancel "that the cited" and substitute --, however, that this-- therefor.

On substitute page 5:

in line 8, after "64 Kbits/s", insert --bandwidth--;

in line 9, cancel "among other things";

in line 11, before "are applied", insert --, among other things--;

in line 15, after "for example", insert --,--; and

in line 27, cancel "therefrom" and substitute --from this data-- therefor.

On substitute page 5a:

in line 10, cancel "therein" and substitute --in this reference-- therefor;

5   above line 13, insert

--SUMMARY OF THE INVENTION--.

in line 13, cancel "means" and substitute --way-- therefor;

in line 14, cancel ", in which this is to be achieved";

in line 17, cancel "means" and substitute --way-- therefor;

10   in lines 18-19, cancel "switching means" and substitute --switch--

therefor;

in line 19, cancel ", whereby" and substitute --. In this system-- therefor;

cancel the paragraph break at the end of line 21;

in line 22, cancel "switching means" and substitute --switch-- therefor;

15   cancel the paragraph break at the end of line 23;

in line 25, cancel "switching means" and substitute --switch-- therefor;

and

in line 27, cancel "," and substitute --.-- therefor.

On substitute page 5b:

20   in line 2, before "the computer", insert --In this system--, and cancel

"means" and substitute --a processor-- therefor;

in line 3, cancel "of these" and substitute --this-- therefor;

in line 5, cancel "," and substitute --.-- therefor;

in line 6, before "characterized", substitute --The communication system

25   is--;

in line 8, cancel "in that, in addition" and substitute --furthermore, that--;

in line 9, after "mode", insert --,--;

in line 11, cancel "processing means, and" and substitute --processor,--

therefor;

in line 13, cancel "these" and substitute --this-- therefor;

in line 14, cancel ",", and cancel "switching means" and substitute --switch-- therefor;

in lines 15-16, cancel "the subject matter of the subclaims", and substitute --discussed below-- therefor;

above line 17, insert

--BRIEF DESCRIPTION OF THE DRAWINGS --;

in line 19, cancel "shows" and substitute --is a block diagram showing-- therefor;

in line 20, cancel "whereby" and substitute --by which-- therefor;

in line 22, cancel "whereby" and substitute --in which-- therefor; and

in line 25, cancel "shows" and substitute --is a block diagram showing-- therefor.

On substitute page 6:

in line 1, cancel "shows" and substitute --is a block diagram showing-- therefor.

On page 7:

in line 1, cancel "shows" and substitute --is a block diagram showing-- therefor, and before "connection", insert --the--;

in line 4, cancel "shows" and substitute --is a block diagram showing-- therefor, and cancel "whereby" and substitute --in which-- therefor;

in line 5, cancel "apparatus are [sic]" and substitute --apparatuses are-- therefor;

in line 8, cancel "shows" and substitute --is a block diagram showing-- therefor;

in line 9, cancel "whereby" and substitute --in which-- therefor;

in line 13, cancel "Figure 7 shows" and substitute --Figures 7A & B are

block diagrams showing-- therefor;

in line 14, cancel the first "whereby" and substitute --in which-- therefor, and cancel "whereby in addition" and substitute --in which-- therefor;

in line 16, cancel "whereby" and substitute --in which-- therefor;

5   in line 17, after "example", insert --,--;

above line 19, insert

--DESCRIPTION OF THE PREFERRED EMBODIMENTS--;

in line 25, cancel "is shown"; and

in line 26, after "1", insert --is shown--.

10   **On page 8:**

in line 1, cancel "already mentioned above" and substitute --previously mentioned--;

in line 2, cancel "in particular" and substitute -- particularly-- therefor;

in line 4, cancel "for example" and substitute --, for example,--;

15   in line 6, cancel "therefore;

in line 10, cancel "By this means, in addition" and substitute --This mechanism additionally allows-- therefor;

in line 11, cancel "can easily be" and substitute --to be easily-- therefor;

in line 17, after "6", insert --,--;

20   in line 18, cancel "for example" and substitute --, for example," therefor;

in line 26, cancel "(not shown here). Not" and substitute --not shown here. Also not-- therefor; and

in line 28, after "as", insert --a--.

25   **On page 9:**

in line 9, cancel "drawn in bold" and substitute --(drawn in bold)--;

in line 10, cancel "on the one hand";

in line 16, cancel "In Figure 7," and substitute --Figure 7 shows-- therefor, and cancel "is shown"; and

in line 25, after "example", insert --,--.

On page 10:

in line 1, before "butterfly", insert --the--;

in line 6, cancel "for example" and substitute --, for example,-- therefor;

in line 8, before "butterfly", insert --the--;

in line 11, cancel "for example" and substitute --, for example,-- therefor;

in line 17, cancel "apparently complicated"; and

in line 18, cancel "outlay" and substitute --expenditures-- therefor.

IN THE CLAIMS:

On substitute page 11:

in line 1, cancel "Patent claims" and substitute --WHAT IS CLAIMED IS:-- therefor;

Please amend the following claims 1-12.

1.   (Amended) A communication [Communication] system comprising: [having]

a [at least one] computer device [(PC),];

a [at least one] telecommunication terminal apparatus; [(TE) and]

a switch [switching means (PABX) that can be connected to a public telephone network, whereby];

said switch, said computer device, and said telecommunication terminal apparatus all allowing connection to a public telephone network;

a first bus system that connects said [the] computer device [(PC)] to said [and] telecommunication terminal apparatus [(TE) are connected via a first bus system (USB),] ;

a second bus system having a smaller bandwidth than said first bus system that is utilized for the connection of individual internal assemblies of said telecommunication terminal apparatus;

an interface that connects said [the] telecommunication terminal

apparatus [(TE) is connected] to <u>said switch;</u> [the switching means (PABX) via an interface (U_{p0/E}),]

 <u>said</u> [the] telecommunication terminal apparatus [(TE)] <u>having</u> [is provided with] a first operating mode in which [the] reception data received from

5 <u>said switch</u> [the switching means] are rerouted by <u>said</u> [the] telecommunication terminal apparatus to <u>said</u> [the] first bus system [(USB)], and are forwarded via <u>said</u> [the] first bus system to the computer device [(PC),];

 <u>said</u> [the] computer device <u>comprising a processor</u> [(PC) is provided with means] for processing [of] data received by <u>said</u> [the] telecommunication terminal

10 apparatus, and for [the] forwarding <u>said</u> [of these] data to <u>said</u> [the] telecommunication terminal apparatus via <u>said</u> [the] first bus system; [,]

 <u>said</u> [whereby the] data [are] <u>being transmitted</u> [emitted] by <u>said</u> [the] telecommunication terminal apparatus; [,]

 [characterized in that the first bus system (USB) exhibits a greater

15 bandwidth than a second bus system (IOM-2) that is employed for the connection of individual, internal assemblies of the telecommunication terminal apparatus, and in that,]

 <u>said first bus system forwarding said</u> [in addition, in the first operating mode the] transmission data produced by <u>said</u> [the] telecommunication terminal

20 apparatus [are forwarded via the first bus system (USB)] to <u>said</u> [the] computer device [(PC)] <u>in said first operating mode;</u> [,]

 <u>said data received by said</u> [the] computer device <u>being processed with said processor</u> [processes the received data using the processing means,];

 <u>said first bus system sending said</u> [and the] processed transmission data

25 [are sent back via said the first bus system] to <u>said</u> [the] telecommunication terminal apparatus; [,] and

 <u>said</u> [the] telecommunication terminal apparatus [reroutes] <u>rerouting said processed transmission data received by said telecommunication terminal apparatus</u> [these data] to <u>said</u> [the corresponding] interface, for forwarding to <u>said</u>

30 <u>switch</u> [the switching means].

2.   (Amended) <u>A communication</u> [Communication] system according to claim 1, <u>wherein:</u> [**characterized in that**]

said processor [the processing device of the computer device] encodes <u>said</u> [the] transmission data produced by <u>said</u> [the] telecommunication terminal apparatus, and decodes <u>said</u> [the] reception data received from <u>said switch</u> [the switching means].

3.   (Amended) <u>A communication</u> [Communication] system according to claim 1<u>, wherein:</u> [or 2, **characterized in that**]

said [the] first bus system is <u>implemented utilizing</u> [realized by] a USB bus<u>:</u> [, and]

<u>said</u> [the] second bus system is <u>implemented utilizing</u> [essentially realized by] an IOM-2 multiplexer<u>:</u> [,] and

all data of <u>said</u> [the] IOM-2 multiplexer are transmitted via <u>said</u> [the] first bus system.

4.   (Amended) <u>A communication</u> [Communication] system according to claim 3, <u>wherein said IOM-2 multiplexer comprises:</u> [**characterized in that**]

<u>a CTRL channel via which said</u> [the] computer device [(PC)] controls <u>said</u> [the] telecommunication terminal apparatus in <u>said</u> [the] first operating mode [according to the [...] via a CTRL channel of the IOM-2 multiplexer,]<u>:</u>

<u>a D* channel, via which said</u> [the] computer device receives items of control information from <u>said</u> the telecommunication terminal apparatus[-- such as for example the items of information produced during the pressing of particular keys of the telecommunication terminal apparatus -- via a D* channel of the IOM-2 multiplexer,] <u>:</u> and

<u>IC channels, via which said</u> [the] computer device [(PC)] and <u>said</u> [the] telecommunication terminal apparatus [(TE)] exchange data [via IC channels of the IOM-2 multiplexer].

5.   (Amended) <u>A communication</u> [Communication] system according to claim 3 <u>wherein said IOM-2 multiplexer comprises:</u> [or 4,**characterized in that**]
        <u>B channels, wherein said</u> [the] telecommunication terminal apparatus reroutes <u>said</u> [the] data only between <u>said</u> [the] interface [($U_{p0/E}$)] and <u>said</u> B channels [of the IOM multiplexer].

6.   (Amended) <u>A communication</u> [Communication] system according to <u>claim 1,wherein said switch</u> [one of claims 1 to 5, **characterized in that** the switching means (PABX)] is a private branch exchange.

7.   (Amended) <u>A communication</u> [Communication] system according to claim 6, <u>wherein said</u> [**characterized in that** the] interface [($U_{p0/E}$)] is a $U_{p0/E}$ interface.

8.   (Amended) <u>A communication</u> [Communication] system according to <u>claim 6, wherein said</u> [one of claims 1 to 7, **characterized in that** the] telecommunication terminal apparatus <u>has</u> [is provided with] a second operating mode, in which it is controlled in a conventional manner by <u>said</u> [the] private branch exchange<u>, and which allows</u> [, whereby in this operating mode] operation independent of <u>said</u> [the] computer device [(PC) is possible].

9.   (Amended) <u>A communication</u> [Communication] system according to <u>claim 1, wherein said</u> [one of claims 1 to 6, **characterized in that** the] telecommunication terminal apparatus [(TE)] is a telephone.

10.   (Amended) <u>A communication</u> [Communication] system according to <u>claim 3, wherein:</u> [one of claims 3 to 9, **characterized in that**]
        <u>said</u> [the] computer device <u>has</u> [(PC) is provided with] a program that enables simulation of a telephone answering device<u>;</u> [,]
        [whereby the corresponding] <u>said</u> transmission data represent spoken

text: [texts,]

     said [and the] computer device <u>further comprises a</u> [is provided with means for storing these] transmission data store <u>which enables</u> [, in order to enable] repeated time-displaced forwarding of <u>said</u> [the] spoken <u>text</u> [texts] to <u>said</u>

5   <u>switch</u> [the switching means] via <u>said</u> [the] telecommunication terminal apparatus<u>;</u> <u>and</u> [,]

     [and whereby the] <u>said</u> reception data [,] which represent messages from callers <u>that</u> [,] are sent by <u>said switch to said</u> [the switching means (PABX) to the] computer device via <u>said</u> [the] telecommunication terminal apparatus [(TE)], <u>that</u>

10   are intermediately stored in <u>said</u> [the] computer device, and <u>that</u> are forwarded in <u>a</u> time-displaced fashion via <u>said</u> [the] telecommunication terminal apparatus, as reception data.

11.   (Amended) <u>A communication</u> [Communication] system according to claim 1, wherein: [one of claims 1 to 10, **characterized in that**]

15   <u>said</u> [the] computer device [(PC)] <u>further comprises a video conferencing</u> <u>mechanism</u> [is provided with means for carrying out video conferences, or is connected with corresponding peripheral devices,]<u>;</u>

     <u>said</u> [whereby the] computer device obtains <u>said</u> [the] reception data from <u>said switch</u> [the switching means] via <u>said</u> [the] telecommunication terminal

20   apparatus<u>,</u> [and] divides <u>said reception data</u> [it] into image data and speech data, displays <u>said</u> [the] image data on a display screen of <u>said</u> [the] computer device, [and] sends <u>said</u> [the] speech data back to <u>said</u> [the] telecommunication terminal apparatus, and

     <u>said</u> [the] computer device assembles transmission data from <u>said</u> speech

25   data and <u>said</u> image data<u>;</u> [,]

     [whereby] <u>said</u> [the] speech data <u>originating</u> from a microphone of <u>said</u> the telecommunication terminal apparatus <u>being</u> [are] transmitted to <u>said</u> [the] computer device via <u>said</u> [the] first bus system, and <u>said</u> [the] transmission data <u>being</u> [are] sent to <u>said switch</u> [the switching means] via <u>said</u> [the]

telecommunication terminal apparatus.

12.   (Amended) <u>A communication</u> [Communication] system according to <u>claim 1, wherein said switch</u> [one of claims 1 to 11, **characterized in that** the switching means (PABX)] corresponds to the ISDN standard.

Please add the following claims 13-16.

13.   A communication system according to claim 3, wherein said items of control information comprise items of information produced during a pressing of particular keys of said telecommunication terminal apparatus.

14.   A method for transmitting data in a communication system having the elements a telecommunication terminal apparatus, a computer device, and a switch, wherein said elements are connectable to a public telephone network, comprising the steps of:

connecting said computer device to said telecommunication terminal apparatus via a first bus system;

connecting individual internal assemblies of said telecommunication terminal apparatus with a second bus system having a smaller bandwidth than said first bus system;

connecting said telecommunication terminal apparatus to said switch via an interface;

receiving reception data by said telecommunication terminal apparatus from said switch;

transmitting said reception data by said telecommunication terminal apparatus operating in a first operating mode to said first bus system, and forwarding said reception data via said first bus system to said computer device;

processing, by a processor of said computer device, said reception data received by said computer device from said telecommunication terminal apparatus;

forwarding, by said computer device, to said telecommunication terminal apparatus, said processed reception data via said first bus system;

further transmitting said processed reception data by said telecommunication terminal apparatus;

5   producing transmission data by said telecommunication terminal apparatus;

forwarding said transmission data by said telecommunication terminal apparatus operating in said first operating mode to said computer device via said first bus system;

10   processing, by said processor of said computer device, said transmission data received by said computer device;

transmitting, by said computer device, to said telecommunication terminal apparatus, said processed transmission data via said first bus system; and

transmitting, by said telecommunication terminal apparatus to said

15   interface for forwarding to said switch.

15.   The method according to claim 14, further comprising the steps of:

sending said reception data by said switch and said transmission data produced by said telecommunication terminal apparatus to said computer device via said telecommunication terminal apparatus, wherein said data received by said

20   computer device represents spoken text;

intermediately storing said data received by said computer device in a transmission data store of said computer device, wherein said computer device further comprises a program that enables simulation of a telephone answering device, and wherein said transmission data store enables repeated time-displace

25   forwarding of said spoken text to said switch via said telecommunication terminal apparatus; and

forwarding said data received by said computer device, by said computer device, in a time-displaced fashion via said telecommunication terminal apparatus.

16.   The method according to claim 14, further comprising the steps of:

obtaining reception data by said computer device from said switch via said telecommunication terminal apparatus, wherein said computer device further comprises a video conferencing mechanism;

5   dividing, by said computer device, said reception data into image data and speech data;

displaying, by said computer device, said image data on a display screen of said computer device;

sending, by said computer device, said speech data back to said

10   telecommunication terminal apparatus;

assembling, by said computer device, transmission data from said speech data and said image data;

transmitting speech data originating from a microphone of said telecommunication terminal apparatus to said computer device via said first bus

15   system;

transmitting said speech data to said switch via said telecommunication terminal apparatus.

IN THE ABSTRACT:

Please cancel the Abstract on original page 15 and substitute the attached

20   Abstract, page 15, Replacement Page.

REMARKS

The present Amendment revises the specification and claims to conform to United States patent practice, before examination of the present PCT application in the United States National Examination Phase. All of the changes

25   are editorial and applicant believes no new matter is added thereby. The amendment of claims 1-12 and the addition of claims 13-16 is not intended to be a surrender of any of the subject matter of those claims.

Early examination on the merits is respectfully requested.

Submitted by,

_____ (Reg. No. 28,982)

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Attorney for Applicant(s)

ABSTRACT

A communication system has a computer device, a telecommunication terminal apparatus, and a switch that can be connected to a public telephone network. The computer device and the telecommunication terminal apparatus are connected via a first bus system, and the telecommunication terminal apparatus is connected to the switch via an interface. In a first operating mode of the telecommunication terminal apparatus, data is received from the switch and rerouted to a first bus system and to the computer device. The computer has a processor to process data received by the telecommunication terminal apparatus, and forwards this data to the telecommunication terminal apparatus via the first bus system and the data are further transmitted by the telecommunication terminal apparatus. The first bus system has a greater bandwidth than a second bus system that connects individual internal assemblies of the telecommunication terminal apparatus. In the first operating mode, the telecommunication terminal also forwards data produced by the telecommunication terminal apparatus to the computer device and the computer processor processes the received data. This data is sent back via the first bus system to the telecommunication terminal apparatus which reroutes this data to the switch.

Specification

Communication system

5   The present invention relates to a communication system for connecting at least one
    telecommunication terminal apparatus and at least one computer device to a switching device.

    Analog telephone equipment is increasingly being replaced by digital equipment, based
    predominantly on the ISDN standard (ISDN = Integrated Services Digital Network). ISDN is
10 defined by several international digital communication standards that are recognized
    worldwide by telephone companies. ISDN technology is used to send both speech and data
    that can include graphics, sound and films [...] digital signals via public telephone networks.
    The ISDN standard comprises digital standard transmission protocols, terminals and
    connection cables. The user is provided with two types of ISDN terminals. The international
15 base terminal (S_0) comprises two B channels, each having 64 Kbit/s, and a D channel having
    16 Kbit/s. The B channels transmit the useful information. The D channel is used for the
    signaling. Up to eight telephones or other terminal apparatuses can then be operated at an S_0
    interface.

20 Besides the base terminal (S_0), the primary multiplex terminal (S_{ZM}), which is likewise
    internationally standardized, is also provided; it comprises 30 B channels and 1 D channel
    having 64 Kbit/s.

    ISDN telephones can be operated directly at public networks or at private branch exchanges
25 (PABX, Private Automatic Branch Exchange). In Germany, public communication networks
    standardly provide two-lead U_{k0} interfaces. In what is known as a network termination (NT),
    these U_{k0} interfaces are converted into a four-lead S_0 interface. For normal operation, the
    network termination requires energy from the public power network. In case of a power
    failure, the network termination (NT) supplies an emergency-supply-authorized terminal
30 apparatus with energy from the public telephone network. Emergency operation is indicated
    by a reversal of the supply voltage at the S_0 interface.

Terminal apparatuses are preferably connected to private branch exchanges via the U_{p0} interface. The U_{p0} interface likewise transmits two B channels and one D channel. The U_{p0} interface is not internationally standardized. For this reason, in addition to it there also exist many other manufacturer-specific U interfaces.

5

Since the ISDN standard is a digital standard, it is particularly easy for computers to be connected to ISDN interfaces via plug-in cards. In contrast to speech transmission via telephone or image transmission using fax machines, computers offer the possibility of transmission of very different data formats. Thus, in the domain of the Internet a multiplicity

10 of image formats, speech compression methods, up to formats for transmitting moving images, are used. The use of computers to send and receive faxes belongs to the prior art. With the corresponding software, a computer connected to a printer and to a scanner replaces a fax machine.

15 One problem in the contemporary PC world is the lack of flexibility of the interfaces used. A PC is standardly equipped with a keyboard interface, one parallel interface and two serial interfaces (RS - 232). The keyboard interface is occupied by the keyboard. One serial interface is allocated to the mouse, and the parallel interface is reserved for the printer. Only the second serial interface is available for additional peripheral devices. In the PC domain,

20 data transmission via a serial interface is limited to a maximum of 115.2 Kbit/s. For this reason, peripheral devices that produce large quantities of data, such as for example scanners, are connected directly to computer-internal busses, such as the PCI bus or the ISA bus, via additional plug-in cards. However, for this purpose it is necessary to open the computer and install additional plug-in cards. Another disadvantage of the many different interfaces in the

25 PC domain is the use of many different plug connections. In order to solve this problem, various bus systems are known in the prior art. In contrast to the PCI (Peripheral Component Interconnect) and ISA (Industry Standard Architecture) busses, an SCSI (Small Computer Systems Interface) interface can also be led out from the computer housing, and can in this way be used for the connection of up to seven peripheral devices having high data

30 transmission rates, such as for example hard disks or scanners. A large number of low-price busses are available, such as for example the Apple Desktop Bus (ADB), the RS-485 interface, which represents an extension of the RS-232 interface, the Access.bus (A.b), the

Connection Highway Interface (CHI), the GeoPort, and, recently, the Universal Serial Bus (USB).

An essential goal in the definition of the USB standard was to provide a low-cost bus system
5 for the connection of external peripheral devices to PCs. The USB bus offers low to medium data transmission rates (up to 12 MBit/s). The USB is thus very well suited for the connection of a large number of peripheral devices, such as for example scanners, Personal Digital Assistants (PDAs), keyboards and mice. Up to 127 devices can be connected to the USB bus. In addition, the PCI bus supports plug-and-play functionality. The connecting
10 cables are shielded four-lead lines. Two leads are thereby used for the transmission of a supply voltage of 5 volts. The two other leads are twisted, and are used for signal transmission. For data transmission rates of 1.5 MBit/s, unshielded untwisted cables are sufficient. The plugs are designed in such a way that one terminal apparatus can feed a maximum of 5 amperes into the supply line of the USB bus. The energy supply via the USB
15 bus offers the possibility of producing peripheral devices without power supply units, thus saving costs.

PCs and other terminal apparatuses, such as for example telephones, can be connected jointly to public telephone networks or also to private branch exchanges. As long as the public
20 telephone network or the private branch exchange provides an interface -- such as for example the S_0 interface or the U_{p0} interface -- that permits the connection of several terminal apparatuses, the PC and the terminal apparatus can be operated at the same interface, as indicated in Figure 3. For reasons of cost, telephones are standardly equipped only with the most necessary functions. The telephone or terminal apparatus in Figure 3 can thus only send
25 data to, and receive data from, the private branch exchange (PABX). Consequently, in Figure 3 a communication between PC and terminal apparatus is possible only indirectly, via the private branch exchange (PABX). Additional manufacturer-specific solutions according to Figure 4 have also been created, in which for example the PC is connected with the private branch exchange (PABX) via an RS-232 interface, via a terminal apparatus (TE). The
30 advantage of this solution is that at the PC side it is possible to use an already-existing interface, such as for example the RS-232 interface. It is disadvantageous that the cited interface does not have the bandwidth required for complete controlling by the PC.

5

Figure 3 shows, in addition, the internal construction of a telephone. A telephone essentially has three user interfaces, namely a microphone (acoustic source), a loudspeaker (acoustic sink) and a keyboard for the dialing process (D channel). These three user interfaces, possibly supplemented by additional input and output units, are

5   connected to the private branch exchange (PABX) or to the public telephone network via the telephone-internal IOM-2 bus (Input-Output Multiplexer) with the $U_{p0/E}$ or S_0 interface. The IOM-2 interface has a frame structure for three IOM channels. Each of these IOM channels provides four sub-channels, each having 64 Kbit/s. In the IOM-2 frame structure, among other things 2 B channels (64 Kbit/s), one D channel (16

10   Kbit/s), one D* channel (16 Kbit/s), one CTRL channel (16 Kbit/s) and 2 IC channels (64 Kbit/s) are applied. The B channels are used for data exchange with the switching center, preferably of speech data. The D channel is used for the exchange of control information with the switching center. The two IC channels are used for the exchange of data, preferably speech data, with additional terminal apparatuses, for example

15   slave phones, and the D* channel and CTRL channel are used for the exchange of control information with additional terminal apparatuses. In the connection with an additional telephone (slave phones), the telephone that is connected with the switching center must be configured as a master phone.

US-A 4,748,656 discloses an interface arrangement that connects a communication

20   system to a telecommunications terminal device. This interface is implemented by a plugin card in a personal computer that, on the one hand, controls the operation of the connected telecommunications terminal device and, on the other hand, offers services of the communication system. The complete signalling from the communication system is interpreted by the personal computer, converted into suitable control signals

25   and forwarded to the telecommunications terminal device. The data received from the telecommunications terminal device are interpreted and modified in the personal computer. Suitable control and signalling messages are derived therefrom that are then forwarded from the personal computer to the communication system. The connection of further peripheral devices to the interface between the personal

30   computer and the telecommunications terminal device, however, is no more possible

5a

than is stand-alone operation of the telecommunications terminal device when the personal computer is turned off.

"Isar -- läßt Daten statt Wasser fließen", ELEKTRONIK, Vol. 45, No. 20, 1 October
5 1996, pages 56-60 describes a semiconductor module both for digital as well as for analog data transmission. This module serves the purpose producing cost-beneficial, passive ISDN PC cards that, parallel to the data transfer with ISDN subscribers, can also communicate with subscribers in the analog network and transmit data. The functions of passive ISDN PC cards that are based on the semiconductor module
10 described therein are comparable to those of active cards. In one applied example, the semiconductor module is connected to an ISDN transceiver via an IOM-2 bus and is connected to a PC bus interface via a local bus.

It is the object of the present invention to indicate a solution by means of which a PC and a telephone can be connected, in which this is to be achieved with a low hardware
15 and software expense, and in which additional peripheral devices can be connected via the interface between the PC and the telephone.

This aim is achieved by means of a communication system having at least one computer device, at least one telecommunication terminal apparatus, and a switching means that can be connected to a public telephone network, whereby the computer
20 device and the telecommunication terminal apparatus are connected via a first bus system,
the telecommunication terminal apparatus is connected to the switching means via an interface,
the telecommunication terminal apparatus is provided with a first operating mode in
25 which the reception data received from the switching means are rerouted by the telecommunication terminal apparatus to the first bus system, and are forwarded via the first bus system to the computer device,

the computer device is provided with means for processing the data received from the telecommunication terminal apparatus, and for the forwarding of these data to the telecommunication terminal apparatus via the first bus system, whereby the data are
5   emitted by the telecommunication terminal apparatus,

characterized in that the first bus system exhibits a greater bandwidth than a second bus system that is employed for the connection of individual, internal assemblies of the telecommunication terminal apparatus, and in that, in addition, in the first operating mode the transmission data produced by the telecommunication terminal
10   apparatus are forwarded via the first bus system to the computer device, the computer device processes the received data using the processing means, and the processed transmission data are sent back via the first bus system to the telecommunication terminal apparatus, and the telecommunication terminal apparatus reroutes these data to the corresponding interface, for forwarding to the switching means.

15   Preferred constructions of the present invention are the subject matter of the subclaims.

In the following, a preferred embodiment of the present invention is explained in more detail with reference to the accompanying drawings.

Figure 1 shows an inventive coupling between the PC and the terminal apparatus via
20   the USB bus, whereby the PC is connected with the private branch exchange (PABX) indirectly via USB, and the PC terminal apparatus is connected with the private branch exchange (PABX) via a $U_{po/E}$ interface, whereby the bandwidth of the USB interface is larger -- by at least the channels 2 IC, D* and CTRL -- than the bandwidth of the U_{po} interface.

25   Figure 2 shows a layer model for the terminal apparatus according to Figure 1 that can be operated both in the conventional symphony mode (BRI) and also in the inventive butterfly mode (BFL),

6

Figure 3 shows the logical data flow given a conventional connection of a PC and of a terminal apparatus to a private branch exchange (PABX) via an S_0 interface or a $U_{p0/E}$ interface, via 2 B channels and one D channel,

Figure 4 shows a conventional cabling, given connection of a PC to a private branch exchange via an RS-232 or S_0 interface via a terminal apparatus (TE),

Figure 5 shows an inventively constructed butterfly architecture, whereby PC and terminal
5   apparatus (TE) are connected via a USB bus, and terminal apparatus are [sic] connected with the private branch exchange (PABX) via a $U_{p0/E}$ interface,

Figure 6 shows a schematic representation of a data transmission in an inventive butterfly architecture in symphony mode, whereby the terminal apparatus is controlled by the private
10   branch exchange in a conventional manner and no data are transmitted directly between PC and terminal apparatus (TE), and

Figure 7 shows a schematic representation of a butterfly architecture in the inventive butterfly mode, whereby the terminal apparatus (TE) is controlled by the PC, whereby in addition the
15   terminal apparatus only forwards the data between the private branch exchange and PC, and whereby, if necessary, the PC again forwards data via the USB bus to the terminal apparatus, for example for loudspeaker output.

According to a preferred embodiment of the present invention, shown in Figure 1, the
20   terminal apparatus (TE), preferably a telephone, is connected physically with a private branch exchange (PABX) via a $U_{p0/E}$ interface. According to another embodiment, the terminal apparatus can be connected with a public telephone network via another interface, for example an S_0 or U_{k0} interface. PC and terminal apparatus are connected physically, preferably via a USB bus. In Figure 5, the cabling between PC, terminal apparatus (TE) and
25   private branch exchange is shown that is required for the exchange of information according to Figure 1.

In principle, all known busses that can transmit a bandwidth of (4x64 Kbit/s + 16 Kbit/s) (4 B channels and 1 D channel) are possibilities for the physical connection between PC and
30   terminal apparatus. However, the hardware expense in the terminal apparatus is particularly low if the physical interface between PC and terminal apparatus can accept the entire bandwidth of the IOM-2 bus, i.e., the entire IOM-2 frame structure (Figure 2). As was

already mentioned above, the bandwidth of the IOM-2 bus is 12x64 Kbit/s. It thus corresponds to 12 B channels, or a total of 768 Kbit/s. This condition is in particular not met by the serial interfaces (RS-232) and the S_0 interface (Figure 4). However, the required bandwidth is for example provided by the USB bus.

5

Since the USB bus is therefore able to transmit the entire IOM-2 frame structure, the two IC channels, the two B channels to the private branch exchange and the D channel need not first be expensively filtered out from the IOM-2 frame structure. Due to the fact that the entire IOM-2 frame structure is transmitted to the PC, the PC can control the terminal apparatus

10   completely. By this means, in addition the data that the private branch exchange sends to the terminal apparatus (downlink) can easily be forwarded to the PC. In addition, by inserting data into the IOM-2 frame structure, the PC can easily send data indirectly to the private branch exchange. For direct communication between the PC and the terminal apparatus, two IC channels are supplied in each direction (uplink and downlink).

15

The IOM-2 frame structure does not occupy the complete bandwidth of the USB bus. For this reason, as shown in Figure 6 additional peripheral equipment can be connected to the PC via the USB bus. Possible devices for this purpose include for example microphones, chip card readers, speed dialing memories, keyboards, mice, and cameras for videotelephony.

20

Figure 2 shows the interleaving of the respective layer 1 bitframe structure in the terminal apparatus. The lowest layer is represented by the USB bus. The IOM-2 layer is located above the USB layer. The IOM-2 layer corresponds to layer 1 of the OSI layer model in the direction of the terminal apparatus. In the direction of the PC, layer 1 of the OSI model is

25   represented by the USB bus. Layer 1 -- conversion IOM/USB -- takes place in a layer 1 converter (e.g. plug-in adapter in telephone) (not shown here). Not shown in Figure 2 is the LAP layer, which corresponds to layer 2 of the OSI layer model. Layer 3 of the OSI layer model is designated as signaling protocol SIG PROT. The signaling protocol SIG PROT can be in two operating states. One operating state is the symphony mode. In symphony mode

30   (see Figure 4 as well as Figure 6), the terminal apparatus is controlled by the private branch exchange PABX. The second operating state is the butterfly mode (BFL) (see Figure 5 as well as Figure 7). In the butterfly mode, the terminal apparatus only forwards data between

the PC and the private branch exchange, without reacting to them. Data (speech) between the PC and the terminal apparatus are exchanged via the two IC channels. The terminal apparatus receives commands from the PC via the control channel (CTRL) (see also Figure 7). The telephone can send control commands, such as keyboard inputs, to the PC via the D+
5　channel.

Figure 6 shows the logical flow of information in the symphony mode. The terminal apparatus communicates with the private branch exchange via the $U_{p0/E}$ interface. The connection drawn in bold to the private branch exchange indicates that the private branch
10　exchange controls the terminal apparatus. The PC can on the one hand communicate with peripheral equipment via the USB bus and can communicate with the private branch exchange via the USB bus and the terminal apparatus. The symphony mode enables telephoning even when the PC is switched off. In symphony mode, the terminal apparatus is controlled by the private branch exchange.
15

In Figure 7, communication in the butterfly mode is shown. The terminal apparatus (TE) is controlled from the PC via the USB bus. This is represented by the USB lines drawn in bold. Data are exchanged only between the PC and the private branch exchange (PABX). These data are merely conducted through the terminal apparatus, and are converted between the
20　$U_{p0/E}$ interface and the USB bus. The PC controls the terminal apparatus via the control channel (CTRL). Keypad inputs on the telephone are transmitted to the PC via the D* channel. The terminal apparatus and the PC can exchange data (speech) via the IC channels.

The butterfly architecture enables the pre-processing of data from the private branch
25　exchange in the PC, and subsequent output on the telephone. Conversely, for example speech inputs via the telephone can be pre-processed in the PC before forwarding to the private branch exchange. For example, the PC can carry out speech encryption. Here the PC would forward the speech data coming from the telephone to the private branch exchange in encrypted form. Encrypted speech signals from the private branch exchange are forwarded to
30　the terminal apparatus in plain text. Since only one B channel to the private branch exchange and one IC channel to the terminal apparatus are respectively occupied, parallel operation of an additional B channel application in the PC is possible.

In addition, butterfly architecture is suitable for the implementation of a telephone answering device on the PC. The PC is characterized by high computing power and large memory capacity on the hard drive. For the implementation of a call answering device function in the butterfly architecture, it is thus sufficient to expand the software on the PC. The speech input
5 and output preferably takes place again via the telephone. Alternatively, additional peripheral devices can for example be connected to the PC.

Another preferred field of application of computer-telephone integration using butterfly architecture is videotelephony. The standard H.320 provides a standard for narrow-band
10 image transmission. Since a display screen is already available in the PC, only a camera for recording the image is required. This camera can for example be connected to the USB bus. According to the H.320 standard, one B channel of the $U_{p0/E}$ interface is used for the video transmission. The second B channel is available for speech transmission (multiplexed with image data). Speech data are inputted and outputted via the telephone. According to the
15 butterfly architecture, speech data are first exchanged between PC and telephone via an IC channel. The PC sends the speech data to the private branch exchange via a B channel. The speech data are thereby conducted through the telephone. This apparently complicated method makes it possible to keep the hardware outlay as low as possible, particularly in the telephone, and to standardize the telephone software to the greatest possible extent.

Patent claims

1. Communication system having at least one computer device (PC), at least one telecommunication terminal apparatus (TE) and a switching means (PABX) that can be connected to a public telephone network, whereby

5   the computer device (PC) and the telecommunication terminal apparatus (TE) are connected via a first bus system (USB),

the telecommunication terminal apparatus (TE) is connected to the switching means (PABX) via an interface ($U_{p0/E}$),

the telecommunication terminal apparatus (TE) is provided with a first operating

10   mode in which the reception data received from the switching means are rerouted by the telecommunication terminal apparatus to the first bus system (USB), and are forwarded via the first bus system to the computer device (PC),

the computer device (PC) is provided with means for processing of data received by the telecommunication terminal apparatus, and for the forwarding of these data to the

15   telecommunication terminal apparatus via the first bus system, whereby the data are emitted by the telecommunication terminal apparatus,

characterized in that the first bus system (USB) exhibits a greater bandwidth than a second bus system (IOM-2) that is employed for the connection of individual, internal assemblies of the telecommunication terminal apparatus, and in that, in addition, in

20   the first operating mode the transmission data produced by the telecommunication terminal apparatus are forwarded via the first bus system (USB) to the computer device (PC), the computer device processes the received data using the processing means, and the processed transmission data are sent back via the first bus system to the telecommunication terminal apparatus, and the telecommunication terminal

25   apparatus reroutes these data to the corresponding interface, for forwarding to the switching means.

2. Communication system according to claim 1,
characterized in that

the processing device of the computer device encodes the transmission data produced by the telecommunication terminal apparatus, and decodes the reception data received from the switching means.

3. Communication system according to claim 1 or 2,

characterized in that

the first bus system is realized by a USB bus, and the second bus system is essentially realized by an IOM-2 multiplexer, and all data of the IOM-2 multiplexer are transmitted via
5   the first bus system.

4. Communication system according to claim 3,

characterized in that

the computer device (PC) controls the telecommunication terminal apparatus in the first
10   operating mode according to the [...] via a CTRL channel of the IOM-2 multiplexer, the computer device receives items of control information from the telecommunication terminal apparatus -- such as for example the items of information produced during the pressing of particular keys of the telecommunication terminal apparatus -- via a D* channel of the IOM-2 multiplexer, and the computer device (PC) and the telecommunication terminal apparatus
15   (TE) exchange data via IC channels of the IOM-2 multiplexer.

5. Communication system according to claim 3 or 4,

characterized in that

the telecommunication terminal apparatus reroutes the data only between the interface ($U_{p0/E}$)
20   and B channels of the IOM multiplexer.

6. Communication system according to one of claims 1 to 5,

characterized in that

the switching means (PABX) is a private branch exchange.

25

7. Communication system according to claim 6,

characterized in that

the interface ($U_{p0/E}$) is a $U_{p0/E}$ interface.

30   8. Communication system according to one of claims 1 to 7,

characterized in that

13

the telecommunication terminal apparatus is provided with a second operating mode, in which it is controlled in a conventional manner by the private branch exchange, whereby in this operating mode operation independent of the computer device (PC) is possible.

5   9. Communication system according to one of claims 1 to 6,
characterized in that
the telecommunication terminal apparatus (TE) is a telephone.

10. Communication system according to one of claims 3 to 9,
characterized in that
10   the computer device (PC) is provided with a program that enables simulation of a telephone answering device, whereby the corresponding transmission data represent spoken texts, and the computer device is provided with means for storing these transmission data, in order to enable repeated time-displaced forwarding of the spoken texts to the switching means via the telecommunication terminal apparatus, and
15   whereby the reception data, which represent messages from callers, are sent by the switching means (PABX) to the computer device via the telecommunication terminal apparatus (TE), are intermediately stored in the computer device, and are forwarded in time-displaced fashion via the telecommunication terminal apparatus, as reception data.

20   11. Communication system according to one of claims 1 to 10,
characterized in that
the computer device (PC) is provided with means for carrying out video conferences, or is connected with corresponding peripheral devices,
whereby the computer device obtains the reception data from the switching means via
25   the telecommunication terminal apparatus and divides it into image data and speech data, displays the image data on a display screen of the computer device, and sends the speech data back to the telecommunication terminal apparatus, and

14

the computer device assembles transmission data from speech data and image data,
whereby the speech data from a microphone of the telecommunication terminal
apparatus are transmitted to the computer device via the first bus system, and the
transmission data are sent to the switching means via the telecommunication terminal
5   apparatus.

12. Communication system according to one of claims 1 to 11,
characterized in that
the switching means (PABX) corresponds to the ISDN standard.

Abstract

Communication system

5   Communication system having at least one computer device (PC), at least one telecommunication terminal apparatus (TE) and a switching means (PABX) that can be connected to a public telephone network, whereby the computer device (PC) and the telecommunication terminal apparatus (TE) are connected via a first bus system (USB) that has a larger bandwidth than a second bus system (IOM-2) that is used for the connection of

10   individual internal modules of the telecommunication terminal apparatus, whereby the telecommunication terminal apparatus (TE) is connected to the switching means (PABX) via an interface ($U_{po/E}$), whereby the telecommunication terminal apparatus (TE) is provided with a first operating mode in which the reception data received from the switching means are rerouted by the telecommunication terminal apparatus to the first bus system (USB), and are

15   forwarded via the first bus system to the computer device (PC), whereby the computer device (PC) is provided with means for processing the data received by the telecommunication terminal apparatus, and for the forwarding of these data to the telecommunication terminal apparatus via the first bus system, whereby the data are emitted by the telecommunication terminal apparatus, and whereby, in addition, in the first operating mode the transmission

20   data produced by the telecommunication terminal apparatus are forwarded via the first bus system (USB) to the computer device (PC), the computer device processes the received data using the processing means, and the processed transmission data are sent back via the first bus system to the telecommunication terminal apparatus, and the telecommunication terminal apparatus reroutes these data to the corresponding interface, for forwarding to the switching

25   means.

Figure 5

BOX PCT
IN THE UNITED STATES DESIGNATED/ELECTED OFFICE
OF THE UNITED STATES PATENT AND TRADEMARK OFFICE
UNDER THE PATENT COOPERATION TREATY--CHAPTER II

5   APPLICANT(S):   JUERGEN BRIESKORN

      ATTORNEY DOCKET NO.:   P00,0134

      INTERNATIONAL APPLICATION NO: PCT/DE98/02634

      INTERNATIONAL FILING DATE: 07 SEPTEMBER 1998

      INVENTION: "COMMUNICATION SYSTEM"

10   Assistant Commissioner for Patents,
      Washington D.C. 20231

REQUEST FOR APPROVAL OF DRAWING MODIFICATIONS

      Sir:

          Enclosed are copies of the drawings (Figures 2, 4 & 5) showing in red,

15   the addition of labels to the elements depicted therein. Approval of the additions is

      respectfully requested.

             Submitted by,

             Steven H. Noll (Reg. No. 28,982)

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FIG 2

B-channel:	IC-channel:
PBX downlink	B-channel PC uplink --> TE
PC uplink	D*:
	D-channel TE uplink --> PC
D-channel:	CTRL:
PBX downlink	PC control for BFL functions
PC uplink	
SIG PROT	SIG PROT

LAYER STRUCTURE

SYMPHONY MODE	BUTTERFLY MODE
2B + D	2IC, D*, CTRL
BRI = U $_{p0/E}$	BFL

IOM-2 FRAME STRUCTURE

USB BUS

FIG 4

Interface:	PC	RS232 S0	TE Tele-Communication Terminal Apparatus	Upo/E	PABX Switch
Data stream:	Computer Device	2B+D		2B+D	
CTI Function:	monitor simulate		conduit		CONTROL

FIG 5

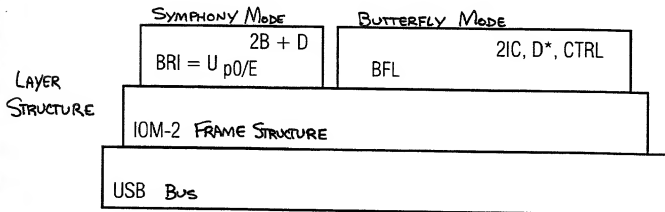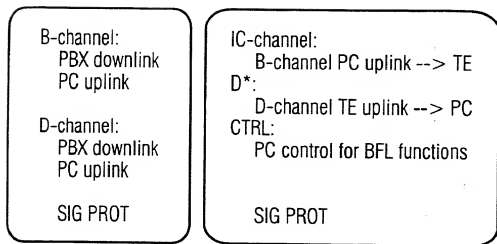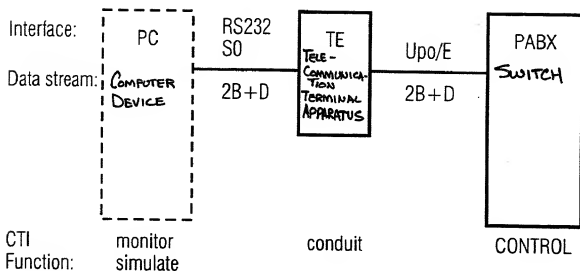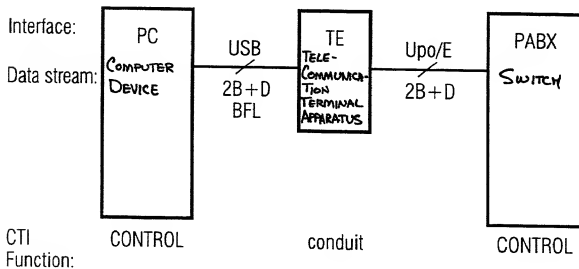| Interface:	PC	USB	TE Tele-Communication Terminal Apparatus	Upo/E	PABX Switch
Data stream:	Computer Device	2B+D BFL		2B+D	
CTI Function:	CONTROL		conduit		CONTROL

09/509049

422 Rec'd PCT/PTO 2 1 MAR 2000

BOX PCT
IN THE UNITED STATES DESIGNATED/ELECTED OFFICE
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INTERNATIONAL FILING DATE: 07 SEPTEMBER 1998

INVENTION: "COMMUNICATION SYSTEM"

10 Assistant Commissioner for Patents,
Washington D.C. 20231

SUBMISSION OF INFORMAL DRAWINGS

Sir:

Applicant herewith submits 7 sheets (Figures 1-7B) of informal drawings

15 for the above-referenced PCT application.

Submitted by,

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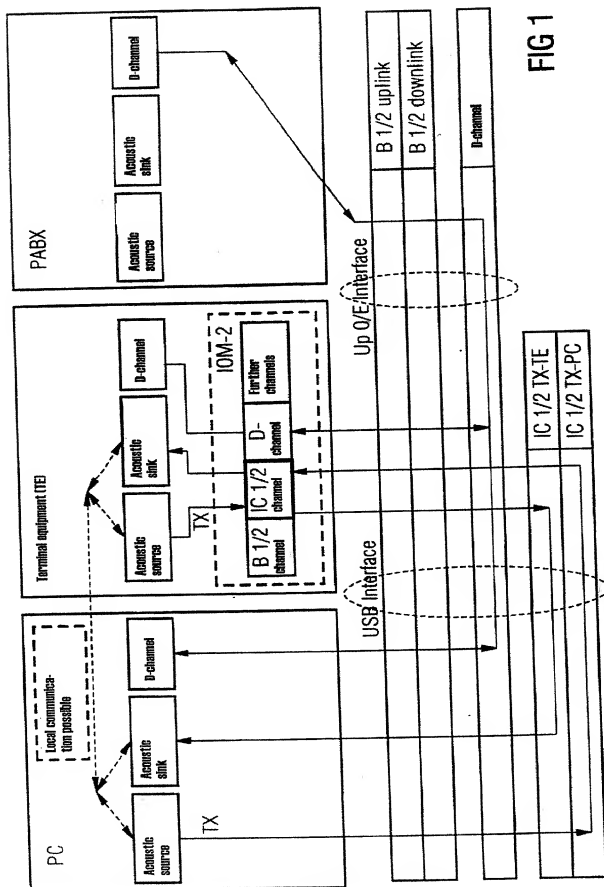(312)876-0200, Ext. 3899
Attorney for Applicant(s)

FIG 1

FIG 2

B-channel:
    PBX downlink
    PC uplink
 	
D-channel:
    PBX downlink
    PC uplink
 	
SIG PROT
	IC-channel:
	    B-channel PC uplink --> TE
	D*:
	    D-channel TE uplink --> PC
	CTRL:
	    PC control for BFL functions
	
	SIG PROT

$2B + D$ $BRI = U_{p0/E}$	2IC, D*, CTRL BFL

IOM-2

USB

FIG 3

FIG 4

Interface:	PC	RS232 S0	TE	Upo/E	PABX
Data stream:		2B+D		2B+D	
CTI Function:	monitor simulate		conduit		CONTROL

FIG 5

Interface:	PC	USB	TE	Upo/E	PABX
Data stream:		2B+D BFL		2B+D	
CTI Function:	CONTROL		conduit		CONTROL

FIG 6

Data stream access capabilities:
- data read access: R
- data transmit/send access: T
- no data access: /

D-channel: SIG PROT uplink (from PC)
D-channel: SIG PROT downlink (from PABX)
B-channel uplink (from PC)
B-channel downlink

FIG 7 A

FIG 7 B

T	D-channel: SIG PROT uplink (from PC)	/T	R (from PC & TE)
R	D-channel: SIG PROT downlink (from PABX)	/	T
T	B-channel uplink (from PC)	/T	R (from PC & TE)
R	B-channel downlink	R	T
T	IC-channel uplink (from PC)	R	
R	IC-channel downlink	T	
T	CTRL channel: SIG PROT uplink & BFL control	R	
R	D*-channel (SIG PROT uplink from TE)	T	

Data stream access capabilities:
- data read access: R
- data transmit/send access: T
- no data access: /

FIG 1

FIG 2

```
B-channel:                  IC-channel:
    PBX downlink                B-channel PC uplink --> TE
    PC uplink               D*:
                                D-channel TE uplink --> PC
D-channel:                  CTRL:
    PBX downlink                PC control for BFL functions
    PC uplink

    SIG PROT                    SIG PROT
```

```
                  2B + D                    2IC, D*, CTRL
BRI = U p0/E          BFL

IOM-2

USB
```

FIG 3

FIG 4

Interface:	PC	RS232 S0	TE	Upo/E	PABX
Data stream:		2B+D		2B+D	
CTI Function:	monitor simulate		conduit		CONTROL

FIG 5

| Interface:	PC	USB	TE	Upo/E	PABX
Data stream:		2B+D BFL		2B+D	
CTI Function:	CONTROL		conduit		CONTROL

FIG 6

Data stream access capabilities:
- data read access: R
- data transmit/send access: T
- no data access: /

D-channel: SIG PROT uplink (from PC)
D-channel: SIG PROT downlink (from PABX)
B-channel uplink (from PC)
B-channel downlink

FIG 7 A

FIG 7 B

			(from PC & TE)	R
				T
			(from PC & TE)	R
				T

D-channel: SIG PROT uplink (from PC)	/T	/
D-channel: SIG PROT downlink (from PABX)	/T	/
B-channel uplink (from PC)	/T	R
B-channel downlink		R
IC-channel uplink (from PC)		R
IC-channel downlink		T
CTRL channel: SIG PROT uplink & BFL control		R
D*-channel (SIG PROT uplink from TE)		T
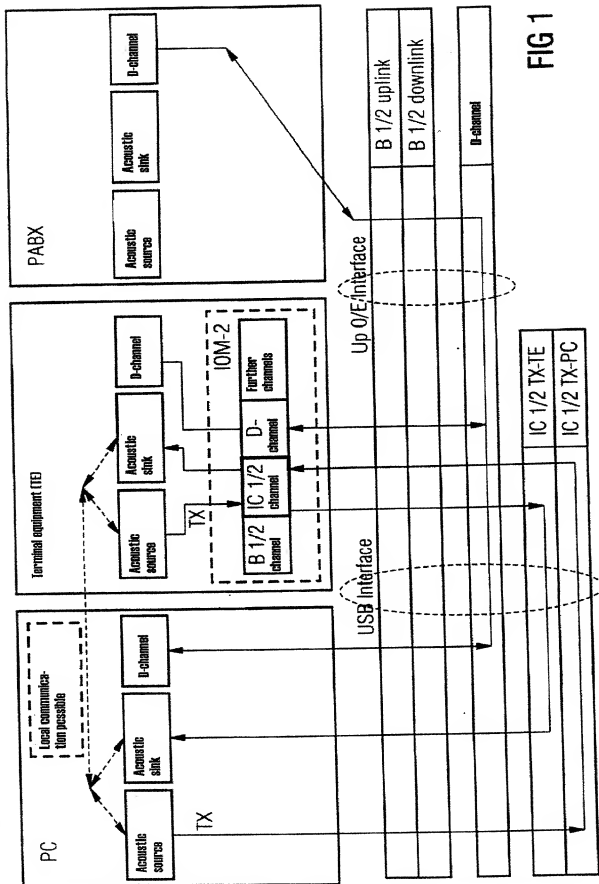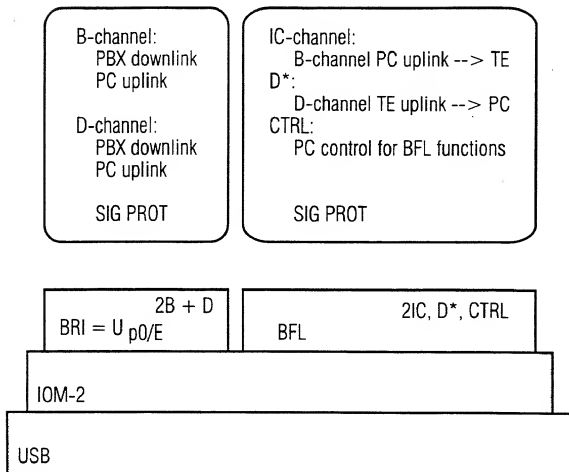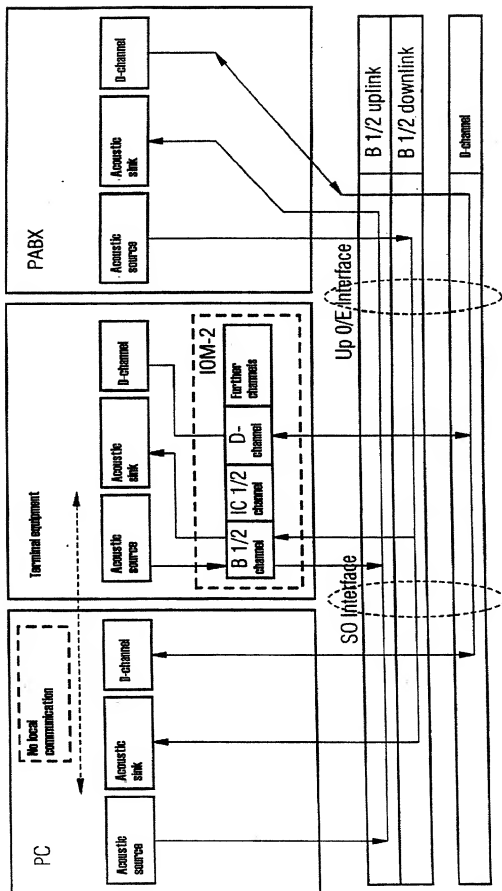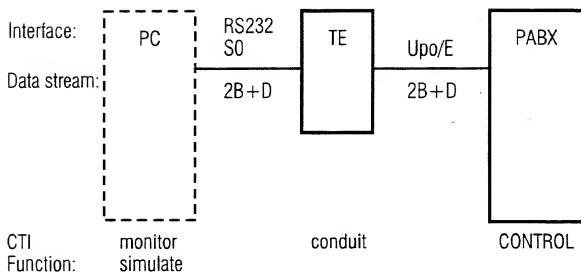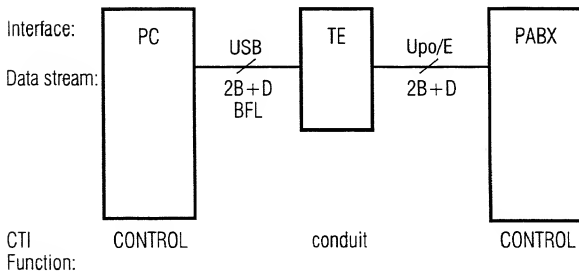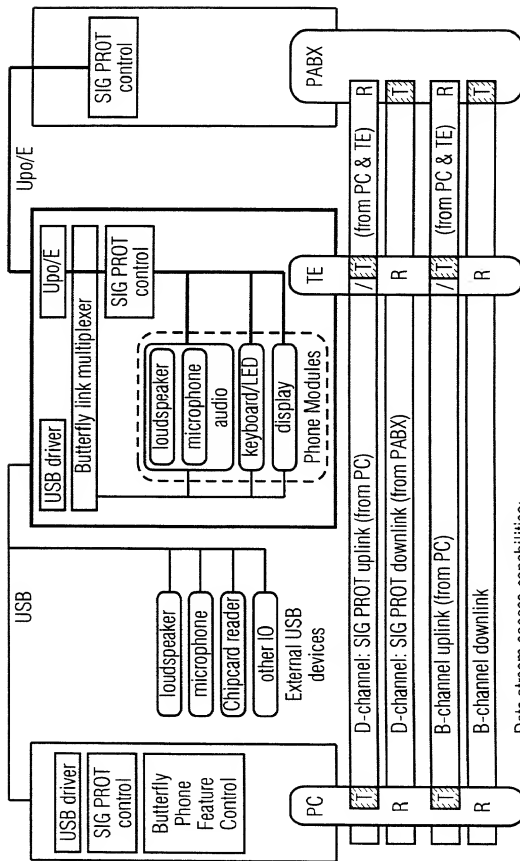
Data stream access capabilities:
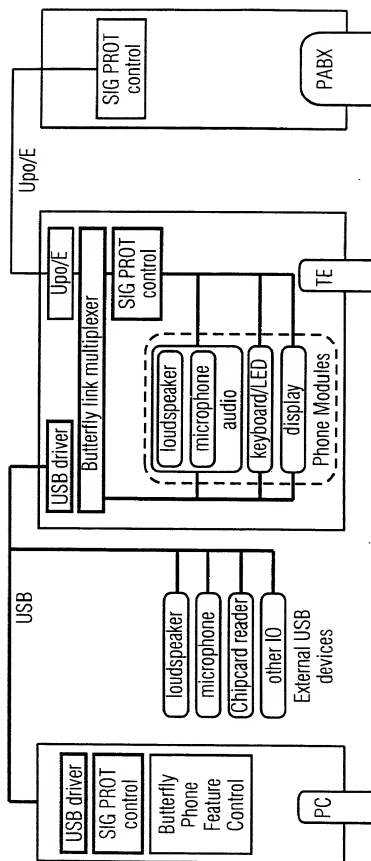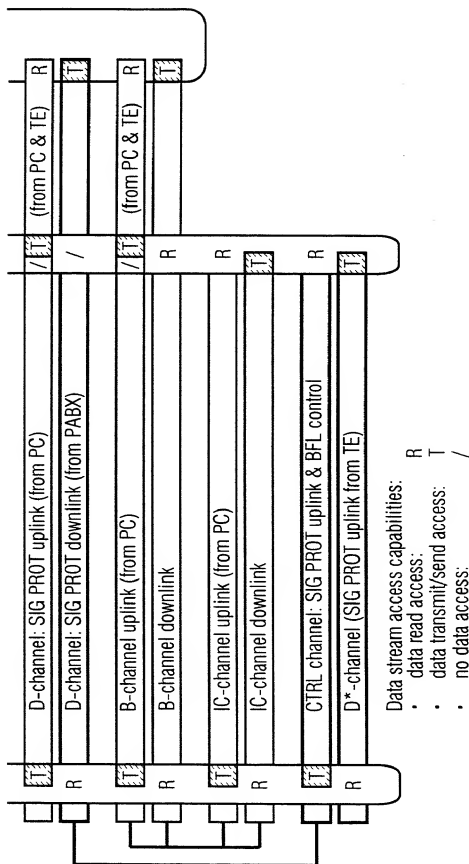- data read access: R
- data transmit/send access: T
- no data access: /

Declaration and Power of Attorney For Patent Application
Erklärung Für Patentanmeldungen Mit Vollmacht
German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

As a below named inventor, I hereby declare that:

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

My residence, post office address and citizenship are as stated below next to my name,

dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Kommunikationssystem

deren Beschreibung

the specification of which

(zutreffendes ankreuzen)

(check one)

[X] hier beigefügt ist.

[ ] is attached hereto.

[ ] am _____ als

[ ] was filed on _____ as

PCT internationale Anmeldung
PCT Anmeldungsnummer _____
eingereicht wurde und am _____
abgeändert wurde (falls tatsächlich abgeändert).

PCT international application
PCT Application No. _____
and was amended on _____
(if applicable)

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I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfinderurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfinderurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

German Language Declaration

Priority Claimed

__19741772.8__   __Germany__   __22.September 1997__   ☒ ☐ ☐
(Number)   (Country)   (Day Month Year Filed)   Yes   No
(Nummer)   (Land)   (Tag Monat Jahr eingereicht)   Ja   Nein

                                     ☐ ☐
(Number)   (Country)   (Day Month Year Filed)   Yes   No
(Nummer)   (Land)   (Tag Monat Jahr eingereicht)   Ja   Nein

                                     ☐ ☐
(Number)   (Country)   (Day Month Year Filed)   Yes   No
(Nummer)   (Land)   (Tag Monat Jahr eingereicht)   Ja   Nein

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozeßordnung der Vereinigten Staaten, Paragraph 122 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind.

I hereby claim the benefit under Title 35. United States Code. §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §122, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occured between the filing date of the prior application and the national or PCT international filing date of this application.

(Application Serial No.)   (Filing Date)
(Anmeldeseriennummer)   (Anmeldedatum)

(Status)   (Status)
(patentiert, anhängig,   (patented, pending,
aufgegeben)   abandoned)

(Application Serial No.)   (Filing Date)
(Anmeldeseriennummer)   (Anmeldedatum)

(Status)   (Status)
(patentiert, anhängig,   (patented, pending,
aufgeben)   abandoned)

Ich erkläre hiermit, dass alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, dass wissentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden koennen, und dass derartig wissentlich und vorsätzlich falsche Angaben die Gültigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentes gefährden können.

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POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. *(list name and registration number)*

19

And I hereby appoint

Messrs. John D. Simpson (Registration No. 19,842) Lewis T. Steadman (17,074), William C. Stueber (16,453), P. Phillips Connor (19,259), Dennis A. Gross (24,410), Marvin Moody (16,549), Steven H. Noll (28,982), Brett A. Valiquet (27,841), Thomas I. Ross (29,275), Kevin W. Guynn (29,927), Edward A. Lehmann (22,312), James D. Hobart (24,149), Robert M. Barrett (30,142), James Van Santen (16,584), J. Arthur Gross (13,615), Richard J. Schwarz (13,472) and Melvin A. Robinson (31,870), David R. Metzger (32,919), John R. Garrett (27,888) all members of the firm of Hill, Steadman & Simpson, A Professional Corporation.

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Unterschrift des Erfinders Datum 8/3/98	Inventor's signature Date	
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Voller Name des zweiten Miterfinders (falls zutreffend):	Full name of second joint inventor, if any:	
Unterschrift des Erfinders Datum	Second Inventor's signature Date	
Wohnsitz	Residence	
Staatsangehörigkeit	Citizenship	
Postanschrift	Post Office Address	

(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Miterfindern angeben).

(Supply similar information and signature for third and subsequent joint inventors).